

ITOS Special Pages and Procs

Integrated Test & Operations System

\$Date: 2006/09/29 17:08:01 \$

ITOS Development & Support Group

NASA/GSFC Code 584, Greenbelt MD 20771

Copyright 1999-2006, United States Government as represented by the Administrator of the National Aeronautics and Space Administration. No copyright is claimed in the United States under Title 17, U.S. Code.

This software and documentation are controlled exports and may only be released to U.S. Citizens and appropriate Permanent Residents in the United States. If you have any questions with respect to this constraint contact the GSFC center export administrator, <Thomas.R.Weisz@nasa.gov>.

This product contains software from the Integrated Test and Operations System (ITOS), a satellite ground data system developed at the Goddard Space Flight Center in Greenbelt MD. See <<http://itos.gsfc.nasa.gov/>> or e-mail <itos@itos.gsfc.nasa.gov> for additional information.

You may use this software for any purpose provided you agree to the following terms and conditions:

1. Redistributions of source code must retain the above copyright notice and this list of conditions.
2. Redistributions in binary form must reproduce the above copyright notice and this list of conditions in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgement:
This product contains software from the Integrated Test and Operations System (ITOS), a satellite ground data system developed at the Goddard Space Flight Center in Greenbelt MD.

This software is provided ‘‘as is’’ without any warranty of any kind, either express, implied, or statutory, including, but not limited to, any warranty that the software will conform to specification, any implied warranties of merchantability, fitness for a particular purpose, and freedom from infringement and any warranty that the documentation will conform to their program or will be error free.

In no event shall NASA be liable for any damages, including, but not limited to, direct, indirect, special or consequential damages, arising out of, resulting from, or in any way connected with this software, whether or not based upon warranty, contract, tort, or otherwise, whether or not injury was sustained by persons or property or otherwise, and whether or not loss was sustained from or arose out of the results of, or use of, their software or services provided hereunder.

ITOS Special Pages and Procs

1 ITOS Provided Pages

The following special pages come with the ITOS distribution, or they are constructed when started using the STOL *PAGE* directive.

2 status

The ITOS *status* page displays the overall status of the telemetry and command subsystems. It is displayed by default when ITOS is started. The global variables displayed on this page are:

`'GBL_MISSION'`
`'GBL_GMTOFF'`
`'GBL_DBVERS'`
`'GBL_ACQUIRE'`
`'GBL_GMTOFF'`
`'GBL_TOTMPKTS'`
`'GBL_MR_PKTTIME'`
`'GBL_CM_CONNECT'`
`'GBL_CM_DESTHOST'`
`'GBL_CMD_PORT'`
`'GBL_CMD_MODE'`
`'GBL_CLCW_RV'`
`'GBL_RETRLIM'`
`'GBL_CLCW_LCK'`
`'GBL_CLCW_RET'`
`'GBL_BP_MODE'`
`'GBL_CLCW_FMB'`
`'GBL_FOPTIMEOUT'`
`'GBL_FOPSTATE'`
`'GBL_LASTVERCMD'`
`'GBL_LOADFILE'`
`'GBL_DUMPFILE'`
`'GBL_REPORTFILE'`

3 tlm

The ITOS *tlm* page displays information of the currently acquired telemetry source. The global mnemonics displayed are:

'GBL_GMTOFF'

'GBL_DBVERS'

'GBL_ACQUIRE'

'GBL_TPKTAPID'

'GBL_TOTMPKTS'

'GBL_TOTMBLKS'

'GBL_TLMRATE'

4 tlmstats

The ITOS *tlmstats* page displays telemetry frame statistics for the currently acquired telemetry source.

The global mnemonics displayed for the master channel are:

‘GBL_TM_MC_FC’
‘GBL_TM_MC_IN’
‘GBL_TM_MC_IDLE’
‘GBL_TM_MC_VERE’
‘GBL_TM_MC_SIDE’
‘GBL_TM_MC_SEQE’
‘GBL_TM_MC_CRCE’
‘GBL_TM_FRMRATE’

The global mnemonics displayed for each virtual channel are:

‘GBL_TM_VC_FC’
‘GBL_TM_VC_IN’
‘GBL_TM_VC_IDLE’
‘GBL_TM_VC_VERE’
‘GBL_TM_VC_SIDE’
‘GBL_TM_VC_SEQE’
‘GBL_TM_VC_CRCE’

The global mnemonics displayed for the packet reassembler are:

‘GBL_RASM_CNT’
‘GBL_RASM_IDLE’
‘GBL_RASM_FILL’
‘GBL_RASM_UNC’
‘GBL_RASM_SEQER’
‘GBL_RASM_BADLEN’

5 allclcw

The ITOS *allclcw* page displays CLCW(Command Link Control Word) information for each command virtual channel. The global mnemonics displayed for each clcw virtual channel are:

'GBL_CLCW_CW'
'GBL_CLCW_VER'
'GBL_CLCW_ST'
'GBL_CLCW_COP'
'GBL_CLCW_VC'
'GBL_CLCW_RF'
'GBL_CLCW_BLK'
'GBL_CLCW_LCK'
'GBL_CLCW_WT'
'GBL_CLCW_RET'
'GBL_CLCW_FMB'
'GBL_CLCW_RT'
'GBL_CLCW_RV'

6 frmstats

The ITOS *frmstats* page displays statistics generated by the *FrameSync* program.

The global mnemonics displayed are:

‘*GBL_GMTOFF*’

‘*GBL_FRMSYNC_CHAN*’

‘*GBL_FRMSYNC_BYTES*’

‘*GBL_FRMSYNC_STAT*’

‘*GBL_FRMSYNC_DROP*’

‘*GBL_FRMSYNC_CNT*’

‘*GBL_FRMSYNC_FPS*’

7 pktcount

The ITOS *pktcount* page displays the number of packets received in telemetry for each packet Apid defined in the database. This page is not modifiable in the traditional sense as with other display pages. It is generated by the `dsp_pktcount` program when the "page pktcount" directive is entered in STOL. The *dbxodb* program creates a global mnemonic for every packet definition found in the source database in the form `GBL_PKTCNT_xxxx` where `xxxx` is the Apid of the packet definition (i.e. `GBL_PKTCNT_0001`, `GBL_PKTCNT_0088`, etc.). These global mnemonics are then incremented while telemetry is flowing each time a packet with the corresponding Apid is received.

8 control

The ITOS *control* page display shows all of the current tasks of type

```
"display page"  
"page snap"  
"packet dump"  
"sequential print"  
"telemetry plot"  
"configuration monitor"
```

that are currently running in ITOS. The user can change the task type to display by changing the Current View from the drop down menu at the top of the *control* page. This page is generated by the program `dsp_control` when the directive "page control" is entered via STOL.

9 limitview

The ITOS *limitview* page display shows all of the mnemonics with current limit violations.

See section “dsp_limitview” in *ITOS Limit Viewer*

10 ITOS Provided Procs

`tlm_destroy(source)` Destroy the telemetry processing chain connected to the given *source*.

`tlm_disconnect(source)` Disconnect the `frame_sorter` connected to the given *source*. The sorter and all downstream processes remain running.

`tlm_connect(source)` Connect an unconnected `frame_sorter` to the given *source*. This is the complement of `tlm_disconnect`.

`relay(station, relayhost, desthost, destport)` This procedure sets up everything necessary for a computer outside the I&T network to get real-time telemetry data.

It starts a `frame_sorter` on the *relayhost*, the computer in the I&T network with two ethernet interfaces: one on the I&T network and one on an external network. It commands the new sorter to listen for an input connection. Then it commands the primary `frame_sorter` to connect to the one on the relay host. Finally, it commands the sorter on the relay host to connect to the external ITOS.

station is the name of the telemetry source to which the primary sorter is connected. It's the name given in the 'ac [<*station*>] ...' directive. *relayhost* is the hostname of the computer that serves as gateway between the private and external networks.

desthost is the hostname of the computer to which you want to relay telemetry.

destport is the port number on the *desthost* to which the relay `frame_sorter` should connect to flow transfer frames.

`relay_connect(desthost, destport, fd)` This procedure is run by the `relay` procedure to make the final connection from the relay host to the external computer. *desthost* and *destport* are as explained above.

fd is the file handle for the connection to the controller opened in the `relay` proc. If this is zero, `relay_connect` will open and close the connection to the controller itself.

This procedure can be run by itself to reconnect a relay setup when the connection has been broken by the final destination.

`relay_to_me(station, tcwhost, destport)` This proc should be run on an ITOS which is not the main system, the test conductor workstation (TCW). It's purpose is to start a `frame_sorter` on the local machine and connect it with the one on the TCW. Before running this proc, reset the `gbl_tmctrl_host` on the local ITOS to the local host name and restart the telemetry subsystem (disable `tlm` & enable `tlm`).

`station` is the name of the telemetry source to which the primary sorter is connected. It's the name given in the "ac [<station>] ..." on the TCW.

`tcwhost` is the hostname of the main ITOS workstation, the Test Conductor Workstation (TCW).

`destport` is the port number on the local machine to which the primary `frame_sorter` should connect to flow transfer frames.

`forward_frames(station, desthost, destport)` This procedure commands the TCW to forward all telemetry frames to another host.

`station` is the name of the telemetry source to which the primary sorter is connected. It's the name given in the "ac [<station>] ...".

`desthost` is the hostname of the computer to which you want to forward telemetry.

`destport` is the port number on the "desthost" to which the `frame_sorter` should connect to flow frames.

`kill_relay` This procedure kills the `frame_sorter` relaying data from the private I&T network to a destination on another network.

It asks for a `frame_sorter` list from the telemetry controller and issues to the controller the 'remove' command to kill the relay sorter, which is the sorter connected to the primary sorter.

`file_capture(operation, station, virtual_channel, directory)` This procedure sets up to capture files transferred from the spacecraft on a single virtual channel. Files are transferred from SMEX-based spacecraft in virtual channels dedicated to that purpose. These VCs do NOT carry packets. This proc invokes the file_capture program.

`operation` either "begin", "end" or "reset" the file capture.

`station` is the name of the telemetry source to which the primary sorter is connected. It's the name given in the "ac [<station>] ...".

`virtual_channel` virtual channel that the file will be sent down over.

`directory` directory where the captured file will be created.